

CLAIMS

A *WHAT IS CLAIMED IS:*

1. Process for carrying out non-adiabatic reactions comprising the steps of:

5 introducing in parallel a first stream of reactants into a first reactions space and a second stream of reactants into a second reaction space;

10 at reaction conditions contacting the first reactant stream with a catalyst in the first reaction space in indirect heat exchange with a heat exchanging medium and contacting the second reactant stream with a catalyst in the second reaction space in indirect heat exchange with a heat exchanging medium, and withdrawing a first and second steam reformed product gas; and

15 the catalyst in the first reaction space being arranged within a tubular reactor in indirect heat exchanging relationship with the heat exchanging medium by introducing the medium into tubular heat exchange space concentrically surrounding the tubular reactor with the first reaction space, the catalyst in the second reaction space being arranged on shell side of a heat exchange space in indirect heat exchanging relationship with the heat exchanging medium.

25 2. Process of claim 1, wherein the non-adiabatic reaction is endothermic steam reforming of a hydrocarbon feedstock.

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3. Process of claim 1, wherein the heat-exchanging medium comprises an effluent stream from autothermal steam reforming of a hydrocarbon feed stock and/or the product gas.

4. Reaction system for carrying out non-adiabatic catalytic reactions, comprising connected in parallel a first and second reaction compartment being adapted to hold a catalyst and to receive a reactant stream, the first compartment being in form of a reactor tube, wherein

a first heat exchange space concentric and spaced apart surrounds the first reaction compartment, and the second reaction compartment surrounds a second heat exchange space.

5. Reaction system of claim 4, wherein the first and second reaction compartment are arranged within a common shell.

6. Reaction system of claim 4, wherein the first and second heat exchange space are formed by a common passage-way.